

How Much Will It Hold?

Reporting Category Measurement

Topic Measuring liquid volume

Materials

- Five measuring containers: a 1-cup, 1-pint, 1-quart, 1-gallon, and 1-liter container
- One quart of water for each center plus one extra gallon for measuring gallons and liters
- How Much Will It Hold? sheet (attached)
- Volume Exit Ticket (attached)

Vocabulary

estimate, predict, cup, pint, quart, gallon, liter, volume

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

Note: Prior to the lesson, set up five learning centers with each center having a 1-cup measuring container, various nonstandard containers of different volumes, and a supply of rice (or sand).

1. Ask students what the word *volume* means. Responses will likely refer to the level of sound on an electronic device. If so, explain that mathematicians use the word *volume* in a different way. Liquid volume is the amount of liquid a container holds. Ask for examples of containers seen in the classroom (e.g., water bottles, jugs, soda bottles). Explain that we can measure the liquid volume of each of these containers.
2. Explain that we use standard measuring tools to measure liquid volume, just like we use standard measuring tools to measure length and weight/mass. Show students standard measuring containers that are used for measuring liquid volume: 1-cup, 1-pint, 1-quart, 1-gallon, and 1-liter containers.
3. Have four learning centers set up with one container (1-pint, 1-quart, 1-gallon, and 1-liter container) at each center. Divide the class into five groups, and send each group to a learning center. Hand out copies of the *How Much Will It Hold?* sheet. First, have groups predict the liquid volume of each nonstandard container *in cups*, record their predictions, and arrange the containers from least to greatest volume. Then, have them measure and record the volume of each nonstandard container, using the 1-cup container and water.
4. Review and summarize with the class what students did and learned in the activity.
5. Hand out copies of the Volume Exit Ticket, and have students complete it for an assessment.

Assessment

- **Questions**
 - Why is it important to use the *same* measuring tool when measuring the liquid volume of various containers?

- Have you seen or used liquid volume measuring tools at home? If so, what tools were they? How were the tools used?

Extensions and Connections (for all students)

- Combine a science lesson with this activity by having students predict how much water a classroom plant can absorb. Ask, “Will it absorb 1 cup, 1 pint, 1 quart, 1 gallon, or 1 liter?” Have students make predictions and give their reasoning. Then conduct an experiment to test their predictions.
- Provide students with odd-shaped containers whose volumes are not easily predicted. Encourage them to investigate what effect height and width have on volume.

Strategies for Differentiation

- Have students assist you in using tape and markers to label the measuring containers, employing volume vocabulary: *cup*, *pint*, *quart*, *gallon*, and *liter*. Encourage the use of volume vocabulary in place of more familiar terminology (e.g., “the gallon jug” rather than “the milk jug”).
- Search the Internet for “Gallon Man” to use as a virtual manipulative to aide in the understanding of relative volumes of containers.

How Much Will It Hold?

Name _____

Name of container	I <i>estimate</i> that the volume is _____ cups.
1.	
2.	
3.	
4.	
5.	

I predict that the containers should be in this order:

Least
volume
↓
Greatest
volume

1. _____
2. _____
3. _____
4. _____
5. _____

Now, use the 1-cup measuring tool to find the *actual volume* of each container.

Name of container	Actual volume is _____ cups.
1.	
2.	
3.	
4.	
5.	

I know that the containers should be in this order:

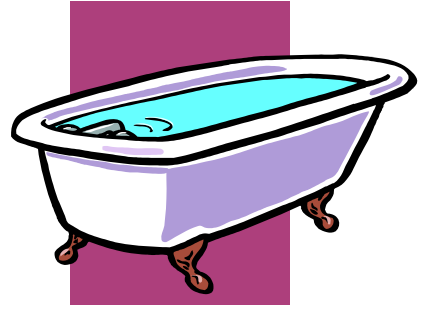
Least
volume
↓
Greatest
volume

1. _____
2. _____
3. _____
4. _____
5. _____

Was your prediction correct? _____ Explain. _____

Volume Exit Ticket

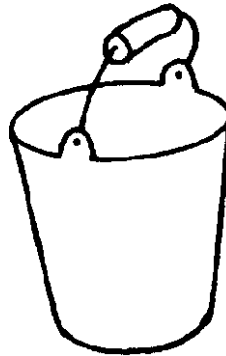
Name _____



1. If you wanted to fill up a bath tub with water, what measuring tool that we used today would be best to use? Why?

2. Mr. Davis wants to wash his window using a bucket filled with water. About how much water will his bucket hold?

- a. 5 cups
- b. 5 gallons
- c. 1 pound
- d. 1 gallon



3. Explain why it is very important to use a standard measuring tool when measuring liquid volume.
